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A new species of the genus *Bryconamericus* Eigenmann, 1907 from southern Brazil (Ostariophysi: Characidae)

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Abstract.—A new characid species, *Bryconamericus lambari,* is described from Southern Brazil. This fish is known only from the arroio Feitoria, a small and rocky mountain tributary of the rio Caí, laguna dos Patos drainage, from município de Dois Irmãos, Rio Grande do Sul, Brazil. The identities of other *Bryconamericus* species described from southern South America are briefly discussed. *Bryconamericus boops* is considered a junior synonym of *B. iheringii* and a lectotype is designated for *Tetragonopterus iheringii.*

Resumo.—*Bryconamericus lambari,* espécie nova, é descrita para o sul do Brasil. A espécie é conhecida somente do arroio Feitoria, um pequeno arroio tributário do rio Caí, sistema da laguna dos Patos, município de Dois Irmãos. A identidade de outras espécies do gênero *Bryconamericus* descritas para o Sul da América do Sul é discutida. *Bryconamericus boops* é considerado sinônimo de *B. iheringii.* É designado o lectótipo de *Tetragonopterus iheringii.*

The characid genus *Bryconamericus* Eigenmann (*in* Eigenmann, McAtee & Ward, 1907) comprises 30–40 species distributed through freshwater basins of South and Central America (Géry 1977). The current definition of the genus follows Eigenmann (1927), who included in *Bryconamericus* all characid fishes that possesses a single row of teeth on the dentary, two rows of teeth on the premaxilla with four teeth in the inner series, a low number of teeth along the anterior margin of the maxilla, a lack of scales on the caudal fin, a large third infraorbital contacting the preopercle along its posterior and ventral margins, setiform gill-rakers, a complete laterosensory canal system on the body, and the absence of a glandular pouch on the caudal fin in males, as recently summarized by Vari & Siebert (1990:517). The naturalness of Eigenmann's genera have been long discussed by several authors and for *Bryconamericus* most recently by Fink (1976), Vari & Siebert (1990) and Malabarba & Malabarba (1994).

We here describe a new species, *Bryconamericus lambari,* from the laguna dos Patos drainage, Rio Grande do Sul, Brazil. We assign the new species to *Bryconamericus* because it has the combination of characters used by Eigenmann to define the genus. A phylogenetic study of the relationships of *Bryconamericus* species and a reconsideration of its monophyly are beyond the scope of this paper.

Type specimens of other southern South American species at present assigned to *Bryconamericus* were examined during this study. Comments about the identity of these species are provided.

Methods

Specimens examined belong to ANSP—Academy of Natural Sciences, Philadelphia;

BMNH—Natural History Museum, London; CAS—California Academy of Sciences, San Francisco; MAPA—Museu Anchieta, Porto Alegre; MCP—Museu de Ciências, now Museu de Ciências e Tecnologia, Pontificia Universidade Católica do Rio Grande do Sul, Porto Alegre; UFRGS—Departamento de Zoologia, Universidade Federal do Rio Grande do Sul, Porto Alegre; and USNM—National Museum of Natural History, Smithsonian Institution, Washington.

Counts and measurements follow Fink & Weitzman (1974), except for number of scale rows between lateral line and pelvic fin origin, counted from the scale row immediately ventral to lateral line to the scale row closest to the first pelvic-fin ray. Counts of vertebrae and procurrent rays of caudal fin were taken from radiographed and cleared and stained specimens. C&S indicates specimens cleared and stained for cartilage and bone according to the method of Taylor & Van Dyke (1985).

Bryconamericus lambari, new species
Fig. 1, Table 1

Bryconamericus sp.—Malabarba, 1989:131 (undescribed species from laguna dos Patos drainage).

Holotype.—MCP 15448 (55.9 mm SL, male), small creek flowing into arroio Feitoria, under bridge of avenida Ipiranga, município de Dois Irmãos, Rio Grande do Sul, Brazil, 51°07′S, 29°36′W, 4 December 1991, Eunice A. Isaia and Andreas Kindel.

Paratypes.—MCP 15449 (14 specimens, 41.4–56.3 mm SL), MCP 15450 (2 specimens C&S, 44.9–52.5 mm SL), USNM 324628 (3 specimens, 42.2–52.9 mm SL), collected with holotype. UFRGS 4539, (1 specimen, 38.5 mm SL), UFRGS 4513 (3 specimens, 50.5–63.5 mm SL), same locality as the holotype, 4 September 1991, Eunice A. Isaia and Andreas Kindel. UFRGS 1784 (2 specimens C&S and 5 specimens colored with alizarin only, 27.3–46.3 mm SL), arroio Feitoria, município de Dois Irmãos, Rio Grande do Sul, Brazil, Luiz R. Malabarba.

Diagnosis.—*Bryconamericus lambari,* new species, is distinguished from all other species assigned to *Bryconamericus* by a combination of the following characters: the total number of anal-fin rays (19–22); number of perforated scales along the lateral line (38–40); its elongated body with greatest depth 24.6–29.8% of standard length; lack of dark pigmentation on the distal tips of the caudal fin; 3 or 4 maxillary teeth; and 5 or 6 scale rows between the lateral line and dorsal-fin origin. *Bryconamericus lambari* is further distinguished from *B. iheringii* (Boulenger 1887), the second species of the genus found in the laguna dos Patos drainage (Malabarba 1989), by the shallower body depth and shorter pelvic fins (Tables. 1 & 2). *Bryconamericus lambari* is further distinguished from *B. stramineus* Eigenmann, 1908 described from the rio Uruguai drainage in its absence of a conspicuous and wide midlateral stripe (present in *B. stramineus*).

Description.—Body elongate, fusiform, laterally compressed. Greatest body depth anterior to or at dorsal-fin origin. Dorsal body profile convex from tip of supraoccipital to dorsal-fin origin; nearly straight from base of last dorsal-fin ray to caudal peduncle. Ventral body profile convex from tip of lower jaw to anal-fin origin; nearly straight or slightly concave along anal-fin base. Dorsal and ventral profiles of caudal peduncle slightly concave.

Snout deeply rounded from margin of upper lip to vertical line through anterior nostrils. Mouth slightly inferior. Maxilla short, reaching vertical line through anterior border of eye. Ventral profile of head gently convex.

Dentary with 4 large teeth, each with 5 cusps, median cusp distinctly larger; followed by smaller teeth (3 or 4 teeth counted in cleared and stained specimens) either with 3–5 cusps or conical. Premaxilla with two tooth rows. Outer row with 3 or 4 (usually 3) teeth, each tooth with 3–5 cusps.

Table 1.—Morphometric data of *Bryconamericus lambari,* new species. Standard length in mm, measurements numbered 2–11 as percents of standard length and 12–14 as percents of head length. Data of the smallest paratype (UFRGS 1784—27.3 mm SL) and of UFRGS 4539 paratype not included.

Character	Holotype	*n*	Range	$\bar{X}$
1 Standard length	55.9	28	30.9–63.5	45.6
2 Predorsal distance	52.6	28	49.1–55.0	51.4
3 Prepelvic distance	45.4	28	43.8–48.4	45.5
4 Anal-fin base	22.9	28	21.0–26.0	23.1
5 Caudal peduncle length	17.2	27	16.1–18.3	17.1
6 Caudal peduncle depth	10.9	28	10.2–11.4	10.8
7 Body depth at dorsal-fin	27.6	28	24.6–29.8	26.9
8 Dorsal–fin length	20.8	24	20.0–24.2	21.8
9 Pelvic–fin length	12.7	28	12.1–15.1	13.4
10 Pectoral fin length	17.7	28	16.6–21.1	18.6
11 Head length	22.7	28	21.2–26.3	23.2
12 Upper jaw length	36.2	28	29.4–37.4	33.9
13 Orbital diameter	37.8	28	36.0–44.2	38.7
14 Interorbital width	33.9	28	27.1–35.5	31.2

Table 2.—Morphometric (1–14) and meristic (15–25) data of the type specimens of *Tetragonopterus iheringii* (A—lectotype—BMNH 1886.3.15.30, and 4 paralectotypes—BMNH 1886.3.15.31-34), *Tetragonopterus pliodus* (B) *Astyanax eigenmanni* (C) and *Bryconamericus boops* (D). Standard length in mm; measurements numbered 2–11 as percents of standard length and 12–14 as percents of head length.

Character	Lecto-type	A range	$\bar{X}$	B	C	D
1 Standard length	64.7	48.8–66.8	58.1	55.9	61.1	59.2
2 Predorsal distance	54.6	55.5–56.8	55.9	49.0	49.8	50.1
3 Prepelvic distance	47.0	46.8–48.0	47.4	46.9	44.3	45.7
4 Anal-fin base	24.4	20.1–23.4	22.1	22.7	23.2	28.5
5 Caudal peduncle length	14.5	14.6–16.0	15.3	14.5	16.7	16.3
6 Caudal peduncle depth	12.9	11.3–12.6	11.7	11.6	13.2	9.8
7 Body depth at dorsal-fin	39.1	32.7–38.1	35.6	34.0	31.2	27.8
8 Dorsal-fin length	25.0	22.7–25.8	24.2	23.6	22.1	23.3
9 Pelvic-fin length	16.5	15.4–18.0	17.2	16.5	16.5	16.6
10 Pectoral-fin length	22.1	19.8–21.7	20.8	20.8	21.1	22.6
11 Head length	24.1	23.1–25.4	23.8	23.1	23.6	23.7
12 Upper jaw length	32.4	33.8–34.7	34.2	35.7	31.3	29.3
13 Orbital diameter	35.6	34.0–38.3	36.3	38.0	30.6	38.7
14 Interorbital width	33.1	31.3–34.5	32.7	33.3	33.3	33.8
15 Unbranched anal fin rays	3	3	3.0	3	3	3
16 Branched anal–fin rays	17	15–17	16.0	17	15	19
17 Dorsal–fin rays	10	10	10.0	10	9	11
18 Pelvic–fin rays	8	8	8.0	8/9	8	8
19 Pectoral–fin rays	12	12	12.0	13	12	13
20 Caudal–fin rays	19	19	19.0	19	19	NC
21 Perforated lateral line scales	37	37–38	37.3	38	38	38
22 Scale rows between lateral line and dorsal fin	6	5–6	5.3	5	5	5
23 Scale rows between lateral line and anal fin	3	3	3.0	3	3	4
24 Predorsal scales	12	11–13	12.0	12	12	12
25 Scale rows around caudal peduncle	14	14	14.0	14	14	14

Fig. 1. Holotype of *Bryconamericus lambari*, new species (MCP 15448, male, 55.9 mm SL).

Four teeth in the inner row, all with 5 cusps, except medial tooth with 4 cusps. Maxilla with 3 or 4 teeth with 3–5 cusps; teeth gradually becoming smaller posteriorly. All maxillary teeth with median cusp distinctly larger.

Dorsal-fin rays ii, 8; tip not reaching adipose fin when fin depressed. Posterior border of dorsal fin straight, perpendicular to body margin when fin erect. Adipose fin present. Caudal fin forked, lobes equal in size, rounded; 8–11 procurrent rays dorsally and ventrally.

Anal-fin rays iii–iv, 14–19 (usually 15–18). Distal margin of anal fin concave with the 6 anterior branched fin-rays longest and gradually decreasing in size posteriorly. Anal-fin origin along vertical line through base of last dorsal-fin ray. Anal fin of males bearing bony hooks from last unbranched ray to 11th branched ray in some individuals, usually reaching the 5th branched ray. Anal-fin rays with 1 pair of hooks per segment, hooks present in posterolateral surface of ray and only caudal branch of each anal-fin branched ray that bears hooks. Hooks retrorse, curved towards ray base. Hooks typically present on up to 10 segments of anterior anal-fin rays; number progressively reduced posteriorly, with hooks on only one segment on last anal-fin ray that bears hooks.

Pectoral-fin rays i, 11–12 (i, 14 in one specimen). Pectoral fin rounded; tip of fin not reaching pelvic-fin origin. Pelvic-fin rays i, 6–7 (i, 6 in only one specimen). Pelvic-fin margin rounded distally, not reaching anal-fin origin. Pelvic-fin rays of males with ventromedial retrorse bony hooks. Hooks present on all branched rays but absent on unbranched ray. Usually 1 pair of slender, long hooks per segment along medial branch and most of their lengths. Hooks also present on other branches of third to fifth rays.

Scales cycloid. Caudal fin without scales. Single row of 4–7 scales on base of anterior 4–7 branched anal-fin rays. Lateral line complete with 38–40 perforated scales. Scale rows between dorsal-fin origin and lateral line 5–6; scale rows between lateral line and pelvic-fin origin 4–5. Predorsal scales 11–14, usually in regular series. Scale rows around caudal peduncle 14. Precaudal vertebrae 16–18; caudal vertebrae 20–22.

Color in alcohol.—Ground color yellowish. Dark midlateral horizontal stripe indis-

Figs. 2–4. 2, Lectotype of *Tetragonopterus iheringii* Boulenger, 1887 (BMNH 1886.3.15.30, male, 64.7 mm SL); 3, Holotype of *Astyanax eigenmanni* Evermann & Kendall, 1906 (USNM 55570, male, 61.1 mm SL); 4, Holotype of *Bryconamericus boops* Eigenmann, 1927 (MCZ 20700, male, 59.2 mm SL).

tinct anteriorly but becoming well defined posterior to vertical line through dorsal-fin origin. Caudal peduncle without a well defined spot. Scattered chromatophores on posterior border of scales. Pigmentation most intense on dorsal portions of head and above midlateral stripe on body. Humeral spot roundish and well defined, centered on

fourth to sixth scales of scale row just dorsal to lateral line.

Sexual dimorphism.—Males of *B. lambari* are easily recognized by presence of bony hooks on anal and pelvic fins.

Etymology.—The species name, lambari, refers to the common name of small characids in southern Brazil.

Distribution.—Despite extensive collections that have been made in several tributaries of laguna dos Patos drainage, *B. lambari* have been found only in the type basin: the arroio Feitoria and tributaries, rio Caí drainage, laguna dos Patos drainage, Rio Grande do Sul, Brazil. Additional collections were also made in other tributaries of rio Caí to determine whether the species also ocurred elsewhere in the basin, but no additional specimens were collected. These other localities are inhabited by *B. iheringii,* which occurrs in the same drainage, but was never found syntopic with *B. lambari.* We cannot explain this peculiar distribution.

Ecology.—All specimens of *B. lambari* were collected in a small sandy and rock bottomed river in the Serra Geral formation of Rio Grande do Sul, Brazil. Although the river consists mainly of rapids, the specimens were caught in areas of low current flow.

Discussion

We examined and compared the type specimens of four species of *Bryconamericus* described from South Brazil, Uruguay and Argentina. *Tetragonopterus iheringii* Boulenger (1887:172–173), with *Tetragonopterus pliodus* Cope (1894:90–91) as a junior synonym, were both described based on specimens originating in laguna dos Patos tributaries, Rio Grande do Sul, Brazil. *Astyanax eigenmanni* Evermann & Kendall (1906:83) was described from the lower rio Paraná, Argentina, and *Bryconamericus boops* Eigenmann (1927:371) was described from a small coastal drainage at Maldonado, Uruguay.

All these species, now assigned to *Bryconamericus,* are deep bodied fishes, and clearly differ from *B. lambari* in body shape and greatest body depth (Figs. 1–4, Tables 1 & 2). However, we found no differences in examined features that clearly permit the recognition of multiple deep bodied *Bryconamericus* species in the region (Table 2). The differences found among the type specimens fall within the range of what we identify as *B. iheringii,* when comparing different samples of that species from several laguna dos Patos tributaries.

Eigenmann (1927:377) previously placed *Tetragonopterus pliodus* as a junior synonym of *B. iheringii,* both species having been described from the same drainage. We follow Eigenmann in maintaining *Tetragonopterus pliodus* as a junior synonym of *B. iheringii.* Eigenmann (1927:380) also pointed out the close similarity of *B. eigenmanni* and *B. iheringii,* but retained both as valid species. The holotype of *B. eigenmanni* presents no clear differences in counts and measurements to *B. iheringii* (Table 2), but we also keep both as valid species. We suggest that a useful comparison needs an in depth statistical study of good population samples from the areas of distribution of both nominal species and the only material we examined from lower rio Paraná was the holotype of *B. eigenmanni.*

The type specimen of *B. boops* (Fig. 4) is an abnormal specimen as was already noted by Géry (1977:390), who nonetheless retained it as a valid species. The measurements presented in Table 2 for *B. boops* are not comparable to the other species. We have found no specimens at the type locality of this species with such a profile presented by the holotype, but rather found only specimens refereable to *B. iheringii.* We propose *B. boops* as a junior synonym of *B. iheringii,* hypothesizing that the holotype of *B. boops* is a deformed specimen of *B. iheringii.*

Comparative material:

Bryconamericus iheringii: BMNH 1886.3.15.30 (*Tetragonopterus Iheringii*

Boulenger, 1887—Lectotype by present designation—64.7 mm SL, male), São Lourenço, Rio Grande do Sul state, Brazil, H. von Ihering. BMNH 1886.3.15.31-34 (*Tetragonopterus Iheringii* Boulenger, 1887—paralectotypes, 11 ex., 48.8–66.8 mm SL, five males and six females), collected with the lectotype. ANSP 21578 (*Tetragonopterus pliodus* Cope, 1894—holotype, 55.9 mm SL, female?), Rio Grande do Sul, Brazil, H. H. Smith (type locality restricted to laguna dos Patos drainage by Malabarba, 1989:120–121, 131). MCZ 20700 (*Bryconamericus boops* Eigenmann, 1927—holotype, 59.2 mm SL), Maldonado, Uruguai, T. G. Cary. Rio Grande do Sul, Brazil: MCP 10074 (57 ex.) Barragem Ernestina, rio Jacui, 16 November 1983, C. A. S. Lucena & L. R. Malabarba. MCP 8430 (33 ex.), açude Garcia, km 56 of road BR 116, Barra do Ribeiro, 18 June 1985, C. A. S. Lucena & R. E. Reis. MCP 11446 (133 ex.), rio Camaquã e poças laterais, Camaquã, 5 May 1987, C. A. S. Lucena, L. R. Malabarba & E. Pereira. MCP 11492 (19 ex.), arroio Chasqueiro, BR 116, between Pelotas and Jaguarão, Arroio Grande, 9 January 1987, C. A. S. Lucena, A. Bergmann & P. Azevedo. UFRGS 2874 (4 ex.), UFRGS 710 (2 ex.), Estação Ecológica do Taim, Rio Grande, 7–8 May 1981, R. E. Reis & J. R. Stehmann. MCP 11264 (176 ex.), arroio Jaguarão, Passo do Centurião, Herval, 8–9 Jan 1987, R. E. Reis, P. Azevedo & I. Costa. Maldonado, Uruguai: MAPA 2056 (16 ex.), arroio Salso, Ruta 9, km 122, 12 Jan 1982, P. A. Buckup & R. E. Reis.

Bryconamericus eigenmanni: USNM 55570 (Holotype of *Astyanax eigenmanni* Everman & Kendal, 1906—61.1 mm SL, male), rio Primero, Cordoba, Argentina, 1903–1904, J. W. Jüteomb.

Bryconamericus stramineus: CAS 40833 (holotype, 39.5 mm SL, female?), Piracicaba, São Paulo, Brazil, R. von Ihering.

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